

## Medical Clothing

The present invention relates to the field of medical equipment and relates particularly to clothing for hospital patients who may undergo physical examination or surgical procedures.

It is normal for patients in hospital to be provided with clothing to wear in bed. This may be a night dress or conventional pyjamas, but in situations where examination of a patient is required, or where surgery may be carried out on the patient, it is usual to provide the patient with a smock which permits easy access to the patient's body. Typical smocks are made from a single piece of material with openings for arms, and an open back portion which may be provided with ties to secure the smock to the patient and prevent the smock from opening accidentally.

A problem with the above smock is that it leaves the back and posterior of the patient somewhat exposed, because of a gap between the tied open sides of the smock. To maintain the modesty and self-respect of the patient, a patient in transit between areas of a hospital may be reluctant to walk, knowing that their body may be exposed to the public from the rear. It is therefore normal practice to use a wheelchair for the patient, which prevents unwanted exposure during transit. This is a significant waste of resources, often requiring a hospital porter who could be better employed undertaking other tasks.

A further problem is that a patient may be provided with a dressing gown or equivalent garment to protect the patient's privacy. This can expose the patient to the risk of cross infection from a previous wearer of the same dressing gown.

Another problem with the described smocks is that the patient requires external help to put on and take off the smock as the ties cannot readily be manipulated behind the patient's back. Hence even relatively able patients require help which, again, is a drain on hospital personnel resources.

The present invention seeks to provide medical clothing which allows easy access to the patient's body for the purpose of examination, treatment or surgery but which also provides coverage akin to normal clothing so that the patient does not feel inhibited or exposed. The clothing allows simple access to most of the patient's body even when the patient is anaesthetised with the minimal loss of the patient's modesty and the minimum of movement by medical staff.

The medical access enabled by this garment minimises the need for medical staff to lift or turn a patient. This saves time, particularly in theatre, and unnecessary additional strain on staff.

According to one aspect of the present invention there is provided medical clothing for a patient, comprising a gown formed with two arm apertures and an open front portion, which is arranged to close around the patient's torso by overlapping of respective sides thereof, and means for fastening the respective sides in an overlapped position.

The gown is intended and configured to be front fastening, which permits self-dressing and undressing by the patient. This is reassuring for a patient as it is the normal arrangement for non-medical clothing. Rear tying, as in the case of known medical gowns, can be distressing for vulnerable patients who may be in an unfamiliar environment and suffering from disorientation.

Preferably, each arm aperture is provided with releasable fastening means for reducing or enlarging the extent of the arm aperture. Beneficially, the arm aperture fastening means may be located in an under-arm portion of the arm aperture. This facilitates sliding of a bent arm through the aperture.

The fastening means may comprise one or more releasable fasteners for each arm aperture, thereby providing a variety of aperture widths according to the degree of access required..

The arm aperture releasable fastening means may comprise a strip of Velcro or a series of press stud pairs. A Velcro type fastener is a fastener which comprises two

detachable faces, one face with a fibrous down and another face provided with a multitude of fibrous down-engaging hooks. The down and hooks are typically formed from plastics material.

The means for overlapped fastening may be a full or partial waist band. A full waist band would extend around the waist of the patient, whereas a partial waistband would typically comprise two bands, each attached at one end to a respective waist region of the gown, and having a free end available for tying to the free end of the other band, without extending completely around the gown.

According to another aspect of the invention there is provided medical clothing for the lower body of a patient, which clothing is configured as a pair of trousers having a waist portion and two leg portions, which trousers are provided with a releasably fastenable access cut which extends from the waist portion to an end cuff of one leg portion, thereby permitting access to the covered portion of the patient's groin and corresponding leg by unfastening of the cut.

In a preferred aspect there is a second releasably fastenable access cut which extends from the waist portion to an end portion of the other leg portion of the trousers, thereby permitting access to the covered portion of the patient's groin and corresponding other leg through the cut by unfastening of the second cut. Thus either the right or left leg may be exposed or both together without moving the patient.

The access cut or cuts may be located on a front region of the trousers.

Preferably the first and second cuts are disposed side by side to define an access panel which extends from a front region of the waist band to a gusset of the trousers. The cuts are preferably symmetrically aligned about the gusset.

An upper waist portion of the panel may be elasticated (for example by an elasticated tuck or ruffle), thereby providing the fastened trousers with an elasticated waist band.

In a preferred arrangement a tie is threaded through a waist portion of the trousers, thereby permitting comfortable tightening of the waist of the trousers to the size of the patient.

The trousers may be configured in leg length as a pair of short trousers, which may be "long shorts" intended to finish between the mid-thigh and knees of the patient.

The cut or cuts are preferably each rendered releasably fastenable by means of at least one Velcro type fastener or a series of press stud pairs. In one embodiment the fastener is elongate and extends substantially the entire length of the cut.

In certain circumstances the gown may be worn without the shorts. Further the gown may be extended in length to allow it to be used as a long gown extending to the patient's knees.

The clothing described hereinbefore may be formed from a breathable polymer felt fabric material. An example of a suitable material is an ultra-soft polyethylene fabric marketed under the trade name DALTEX Medical. The material provides splash protection and is air breathable. The fabric may be sterilised, for example by ethylene oxide or by gamma-source radiation.

The clothing is preferably packaged in a hermetically sealed enclosure suitable for sterilisation. When sterile, the garment is suitable for use in high infection risk environments, for example, burns units or for patients undergoing implant surgery.

The clothing may be provided with instructions or labelling indicating disposal after use. In certain embodiments however the clothing may be intended for washing and re-use. An example of the reusable material will be a fabric comprising polyester and cotton able to withstand frequent washing at high temperatures and sterilisation prior to re-use as described above.

According to another aspect of the invention there is provided a medical clothing combination comprising a packaged gown as previously described and pair of trousers as previously described.

Following is a description by way of example only and with reference to the drawings of products in which the present invention is embodied.

In the drawings:-

Figure 1 is a front view of a patient wearing a gown and shorts according to the present invention.

Figure 2 is a front side view of the gown.

Figures 3 and 4 are front side views of a patient wearing a gown, showing manipulation of her arm to remove one side of the gown for chest area access.

Figure 5 shows a patient with an arm withdrawn from a sleeve and one side of the thorax exposed.

Figure 6 is a front view of a pair of shorts according to the present invention.

Figures 7A, 7B and 7C are a series of front views of the shorts, showing opening of one leg.

Figures 8A, 8B and 8C are a series of front views showing opening of both legs.

In figure 1 a gown is shown as 10 and a pair of shorts 50. A patient 1 is shown wearing the gown and shorts. The gown has two sleeves 11,12 which finish just above elbow length. The sleeves are very loosely fitting to allow easy access to the arm for fitting or removal of the gown. The body of the gown has an opening front, with overlapping leaves 13,14. The leaves are tied together by waist ties 15,16 which are attached in two places to the gown at above the hips. The free ends of the ties are loosely knotted.

The shorts have two leg portions 51,52 which finish just above the knees of the patient at a mid-thigh region.

## Gown

Figure 2 shows the gown only, viewed from the front side with the ties undone. A back portion 9 of the gown is visible. Sleeve 12 is shown with an access cut 19 open. Four press Velcro (trade name) - hook pad and felt pad - pairs 20, 21, 22 and 23 allow fastening and release of the cut, thereby permitting access to the torso of the patient, and aiding unsleeving of the patient's arm and shoulder from the gown. The other sleeve 11 is shown with the access cut closed by engagement of the Velcro pads. Although Velcro studs are shown in the figure, other releasable fastening means may be used; for example press studs, hooks or buttons. The extent of the opening of the cut may be varied according to whether all or some of the pads are engaged or disengaged.

A further Velcro pad pair 17,18 is located on respective leaves of an upper portion of the gown. One pad 17 is on an outer surface of one leaf of the gown, while the other 18 is on an inner surface of the other leaf. The upper leaf is tailored to provide a substantial overlap of leaves from the upper pad engagement down to the lower end regions of the gown (as evident from the dashed line in figure 1).

Figure 3 shows an incapacitated patient wearing the gown, with the access cut of the sleeve 12 open. The patient's elbow has been elevated. In figure 4 the arm is shown having been manoeuvred so that the hand and wrist is returned inside the sleeve through the cut 19. The gown may now be opened to reveal the entire upper side of the patient's torso, shoulder and arm.

Figure 5 shows an exposed side 22 of the patient after unsleeving of sleeve 11. The exposed area of the patient is now accessible for treatment, examination or surgery.

## Shorts

Figure 6 is a front view of the short trousers 50. The shorts have two leg portions 51 and 52. There is a waist band 53 with a drawstring 59. Two generally vertical cuts (not visible) along the front side of each leg portion are held Velcro strips 54, 55. The cuts and strips extend between the waist band at one end to the leg portion cuffs at the other end.

The sequence for opening one of the cuts is shown in figures 7A, 7B and 7C. Velcro strip 55 is undone at the waist region (fig 7B) and drawn apart as at fig 7C to permit exposure of a patients groin and upper thigh.

- 5 Both strips 55 and 54 may be undone as shown in the sequence in figures 8A, 8B, 8C so that a panel 57 defined between the two strips is drawn down. The panel then remains attached to the shorts at a gusset 58. In this way the front hip, waist and groin and both upper thigh of the patient may be exposed for treatment of examination.
- 10 The present invention provides clothing which maintains the modesty of the patient and permits selective exposure of certain local regions of the body. Because the patient is well covered by the clothes, he or she may walk without feeling exposed or embarrassed.